

CLAIMS

1 1. A method for transforming a program having a first
2 multi-tasking property to a program having a second
3 multi-tasking property, the method comprising:
4 transforming a first program having a first multi-
5 tasking property into a data structure;
6 transforming the data structure to include an
7 explicit multi-tasking transfer of control
8 command;
9 optimizing the data structure to reduce an amount
10 of program state that is saved at a transfer
11 of control; and
12 generating a second program having a second multi-
13 tasking property using the optimized data
14 structure.

1 2. The method of claim 1, wherein the data structure
2 further comprises a syntax tree.

1 3. The method of claim 2, wherein the step of transforming
2 the data structure to include an explicit multi-tasking
3 transfer of control command further comprises:

4 converting the syntax tree to a continuation-
5 passing style (CPS).

1 4. The method of claim 1, wherein the first multi-tasking
2 property comprises a property relating to a preemptive
3 multitasking model and the second multi-tasking
4 property comprises a property relating to a run-to-
5 completion model.

1 5. The method of claim 1, wherein the first program having
2 a first multi-tasking property operates using a first
3 program language and the second program having a second
4 multi-tasking property also operates using the first
5 program language.

1 6. A system for transforming a program having a first
2 multi-tasking property to a program having a second
3 multi-tasking property, the system comprising:
4 a data structure transformer for transforming a
5 first program having a first multi-tasking
6 property into a data structure;

7 a multi-tasking transformer for transforming the
8 data structure to include an explicit multi-
9 tasking transfer of control command;
10 a program state optimizer for optimizing the data
11 structure to reduce an amount of program
12 state that is saved at a transfer of control;
13 and
14 a program generator for generating a second
15 program having a second multi-tasking
16 property using the optimized data structure.

1 7. The system of claim 6, wherein the data structure
2 further comprises a syntax tree.

1 8. The system of claim 7, wherein the multi-tasking
2 transformer further comprises:

3 a converter for converting the syntax tree to a
4 continuation-passing style (CPS).

1 9. The system of claim 6, wherein the first multi-tasking
2 property comprises a property relating to a preemptive
3 multitasking model and the second multi-tasking

property comprises a property relating to a run-to-completion model.

10. The system of claim 6, wherein the first program having a first multi-tasking property operates using a first program language and the second program having a second multi-tasking property also operates using the first program language.

11. An article of manufacture for transforming a program having a first multi-tasking property to a program having a second multi-tasking property, the article of manufacture comprising:

at least one processor readable carrier; and
instructions carried on the at least one carrier;
wherein the instructions are configured to be readable from the at least one carrier by at least one processor and thereby cause the at least one processor to operate so as to:

transform a first program having a first multi-tasking property into a data structure;

14 transform the data structure to include an
15 explicit multi-tasking transfer of
16 control command;
17 optimize the data structure to reduce an
18 amount of program state that is saved at
19 a transfer of control; and
20 generate a second program having a second
21 multi-tasking property using the
22 optimized data structure.

1 12. A processor readable medium for providing instructions
2 to at least one processor for directing the at least
3 one processor to:

4 transform a first program having a first multi-
5 tasking property into a data structure;
6 transform the data structure to include an
7 explicit multi-tasking transfer of control
8 command;
9 optimize the data structure to reduce an amount of
10 program state that is saved at a transfer of
11 control; and

12 generate a second program having a second multi-
13 tasking property using the optimized data
14 structure.

1 13. A signal embodied in a carrier wave and representing
2 sequences of instructions which, when executed by at
3 least one processor, cause the at least one processor
4 to transform a program having a first multi-tasking
5 property to a program having a second multi-tasking
6 property by performing the steps of:
7 transforming a first program having a first multi-
8 tasking property into a data structure;
9 transforming the data structure to include an
10 explicit multi-tasking transfer of control
11 command;
12 optimizing the data structure to reduce an amount
13 of program state that is saved at a transfer
14 of control; and
15 generating a second program having a second multi-
16 tasking property using the optimized data
17 structure.